Space Weather Forecast

Issued on Monday, 22 August 2022 at 00:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance G1 Minor Storms Day 1 or 2 (22nd/23rd).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity is Low, with five sunspot regions on the Earth-facing disc. A number of common class flares were observed, a couple of which were from the previous active sunspot which has now rotated off the disc as a simplifying region. The most notable of the visible sunspots is a relatively small but developmental region in the northeast. This has seen size gradually increase in the last 24 hours, and also some increasing magnetic complexity. The other regions are generally small and simple. No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: The solar wind speed persisted at elevated levels, near 550 km/s, after a brief peak near 600 km/s around 21/0400 UTC. This was likely due to ongoing CME on fast wind influence from a coronal hole. The total magnetic field strength, was generally weak, with the north-south component variable but also relatively weak. Geomagnetic activity was Quiet to Unsettled, with an Active interval 21/1500-1800 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Very Low, but with a slight chance of Moderate flares, predominately from the new developing sunspot.

Solar Wind / Geomagnetic Activity: Current elevated solar winds have the potential to see further enhancements due to further arrivals of fast solar wind on day 1 or 2 (22-23rd), along with a further CME glance that is possible later day 1 or possibly day 2. This CME left the Sun on the 19th due to a Moderate flare from the recent active sunspot. This is arrival low confidence however. Day 3 and beyond is then likely to see these elevated winds gradually ease with no further arrivals forecast. Geomagnetic activity is forecast to be Quiet to Unsettled, with a chance of Active intervals day 1 and 2 (22nd and 23rd), but with a chance of rising to Active to G1/Minor Storms due to any CME or fast wind arrivals. This activity easing to Mainly Quiet with Unsettled intervals possible day 3 and day 4 (24th and 25th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	30	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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